

Claims

1. Lock mechanism for a dispenser in combination with an exchangeable roll of material, the roll being provided with at least one end plug (50) with a bearing pin (44) for mounting the roll to the lock mechanism of the dispenser, comprising:
  - a lock housing (12) with a guide slot (14) for insertion of the bearing pin (44), the guide slot having a first section (14') with a first width and a second section (14'') with a second width which is smaller than the first width, first and second sections (14', 14'') being arranged in a direction perpendicular to the longitudinal extension of the guide slot (14) and in a longitudinal direction of the bearing pin (44) to be received;
  - a sliding element (16) mounted to the lock housing (12) and movable between a first position closing or narrowing the guide slot (14) and a second position opening the guide slot (14);
  - a lock element (18) mounted to the sliding element (16) and rotationally movable around an axis of rotation (24) between a locked position and an unlocked position;
  - the lock element (18) being provided with an engagement portion (23) which, in the locked position, is engaged with a locking geometry (32) of the lock housing (12).

2. Lock mechanism according to claim 1,  
characterized in that  
the lock element (18) has an abutment portion (22)  
which, in the locked position, protrudes into the first  
5 section (14') of the guide slot.
3. Lock mechanism according to claim 1 or 2,  
characterized in that  
the engagement portion (23) of the lock element (18) is  
10 hook-shaped and, in the locked position, provides a form  
fit engagement with the locking geometry (32) of the  
lock housing (12).
4. Lock mechanism according to any of the preceding claims,  
15 further comprising an elastic element (20) biasing the  
lock element (18) into the locked position.
5. Lock mechanism according to claim 4,  
characterized in that  
20 the elastic element (20) is a leaf spring exerting a  
biasing force on the lock element (18) at a distance  
from the axis of rotation (24) of the lock element (18).
6. Lock mechanism according to any of the preceding claims,  
25 characterized in that  
the sliding element (16) is provided with a beveled  
camming surface (54) which, in the first position of the  
sliding element (16), protrudes into the guide  
slot (14).  
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7. Lock mechanism according to any of the preceding claims  
characterized in that  
the sliding element, in the first position, narrows the  
first section (14') of the guide slot.

8. Lock mechanism according to claim 6,  
characterized in that  
the mutual position of the abutment portion (22) of the  
lock element (18) and the beveled camming surface (54)  
5 of the sliding element (16) are such that, upon  
insertion of the bearing pin (44), first the bearing pin  
exerts a force on the abutment nose (22) and articulates  
lock element (18) out of engagement with the locking  
geometry (32) of the lock housing (12); and then the  
10 bearing pin (44) engages the camming surface (54) of the  
sliding element (16).
9. Lock mechanism according to any of the preceding claims,  
characterized in that  
15 the guide slot (14) is straight.
10. Lock mechanism according to any of the claims 1 to 8,  
characterized in that  
the guide slot (14) is curved.  
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11. Lock mechanism according to any of the preceding claims,  
characterized in that  
the first width and the second width of guide slot (14)  
are constant over the longitudinal extension of the  
25 guide slot (14) when the sliding element (16) is in the  
second position.
12. End plug (50) for a roll of material to be inserted into  
a lock mechanism according to any of the preceding  
30 claims, comprising:  
  
- a receiving portion (40) with dimensions to fit  
into a hollow core of the roll of material; and  
  
35 - a bearing portion including a bearing pin (44) with  
a first end and a second end (52) remote from the  
receiving portion (40); wherein

- the bearing pin (44) has at least two diameter portions with different outer diameters, a first diameter portion (44a) closer to the second end (52) with a larger diameter and a second diameter portion (44b) further remote from the second end (52) with a smaller diameter than the first diameter portion (44a).  
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13. End plug according to claim 12, wherein the first and  
10 second diameter portions (44a, 44b) are contiguous with each other.
14. End plug according to claim 12 or 13, wherein the first diameter portion (44a) has an outer diameter of at  
15 least 5mm and the second diameter (44b) portion has an outer diameter of 3,5mm or less and an axial length exceeding ... mm.
15. End plug according to any of the claims 12 to 14,  
20 further comprising a plurality of radially extending ribs (46) on the outer circumference of the receiving portion (40).
16. End plug according to any of the claims 12 to 14,  
25 further comprising a flange-shaped stop member (42) around the receiving portion (40) to limit the depth of insertion of the receiving portion (40) into the hollow core of the roll of material.
- 30 17. End plug according to any of the claims 12 to 16, characterized in that the end plug (50) is integrally extruded from plastics material, especially PP or PE.

18. Use of an end plug according to any of the claims 12 to 17 for fitting into the hollow core of a roll of material, in particular a paper towel roll or tissue paper roll wound around the hollow core.

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19. Roll of material for use in a lock mechanism according to any of the claims 1 to 11 and being provided, at least at one longitudinal end of the roll, with an end plug according to any of the claims 12 to 17.

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20. Dispenser for exchangeable paper rolls, in particular tissue paper rolls, comprising

- a housing; and

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- laterally extending receiving means for mounting a lock mechanism according to any of the claims 1 to 11.

20 21. Method for inserting an exchangeable roll of material with at least one end plug according to any of the claims 12 to 17 into a lock mechanism according to any of the claims 1 to 11, comprising the steps:

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(i) placing the roll of material into the lock mechanism such that the first diameter portion of the bearing pin enters the first section of the guide slot and the second diameter portion of the bearing pin enters the second section of the guide slot;

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(ii) shifting the bearing pin of the end plug within the guide slot such that the first diameter portion comes into engagement with the lock element;

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- (iii) further shifting the bearing pin of the end plug within the guide slot and effecting an articulation of the lock element around its axis of rotation from the locked position to the unlocked position in which the lock element is out of engagement with the locking geometry of the lock housing;
- (iv) further shifting the bearing pin of the end plug within the guide slot such that the bearing pin comes into engagement with the sliding element;
- (v) further shifting the bearing pin of the end plug within the guide slot such that the sliding element is shifted from the first position to the second position; and
- (vi) further shifting the bearing pin of the end plug within the guide slot until the bearing pin reaches an operation position, preferably at a bottom surface of the guide slot.
22. Method according to claim 21, wherein, in steps (iii) and (v), the movement of the bearing pin is effected with a force sufficient to overcome the biasing force of an elastic element.
23. Method according to claim 21 or 22, characterized in that, in step (iv) the second diameter portion of the bearing pin comes into engagement with the sliding element.